



# The Rutland 503

A completely unique **mini windcharger** designed with the weekend yachtsman in mind. The Rutland 503 is ideal for trickle charging batteries on board vessels less than 10m in length with battery banks of up to 100Ah. This latest model follows the success of its predecessor the Rutland 500 with a number of enhancements including performance and styling.

- Safety turbine" is a single injection moulding of 6 aerofoil blades protected by an outer ring.
- Trickle charges in windspeeds as low as 5 Knots
- Produces 25w in 19 Knots
- Produces up to 60w, nominally 5A @ 12V in 50 Knots
- Stainless steel fasteners and marine grade materials
- Turbine diameter of 500mm
- Compact turning radius of just 225mm, great for when space is at a premium
- Latest design improvements - the Rutland 503 is more reliable and efficient than ever!
- No radiated interference - complies fully with BS EN5008-1 1992



## Balance of System Components:

- SR60 - Shunt type voltage regulator prevents battery overcharge.
- RWS60 Controller - incorporates SR60 in attractively housed controller including ammeter, LED voltage level indicator, charge fuse and simple to wire terminals. Input terminals included for solar panel of maximum 30w
- Marine Mounting Kit supplied in 2 sections of stainless steel tube plus deck fixing and fasteners.



## Other System Components:

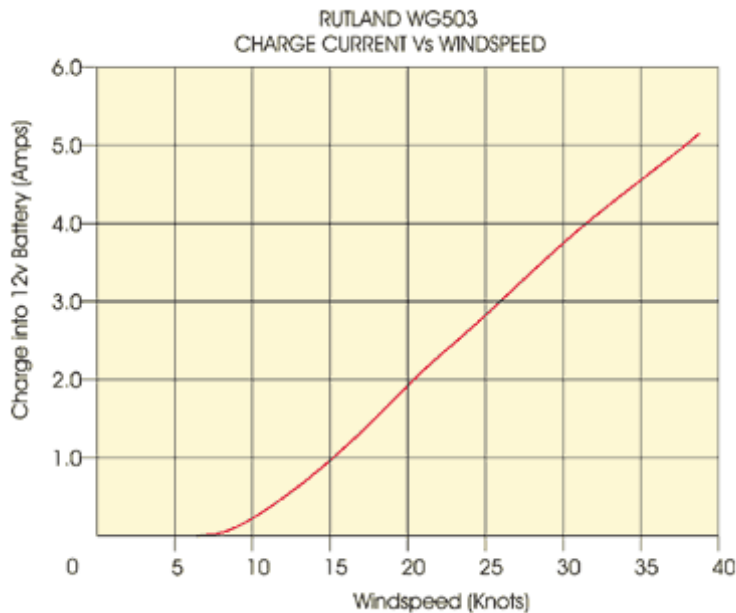
- Batteries - We recommend deep cycle lead acid batteries, sealed or non-sealed of a minimum capacity of 50AH @ 12V
- Cable - Cable thickness depends on the overall length used between the wind generator, regulator and battery. For distances up to 20m a cable thickness of 2.5mm is recommended. The regulator should always be sited within 1.5m of the battery to minimise voltage losses and ensure accuracy of battery regulation.
- Mounting pole for land based systems - the 503 can be installed on land using Marlec's 1m section of tube. This can be adapted to fit onto a 6m length of 61mm diameter tube available through a local tube stockholder.
- Mounting pole for on-board systems - you can make your own mounting pole using a 31.7mm (1.25") internal diameter tube, the maximum external diameter should be 38mm (1.5").



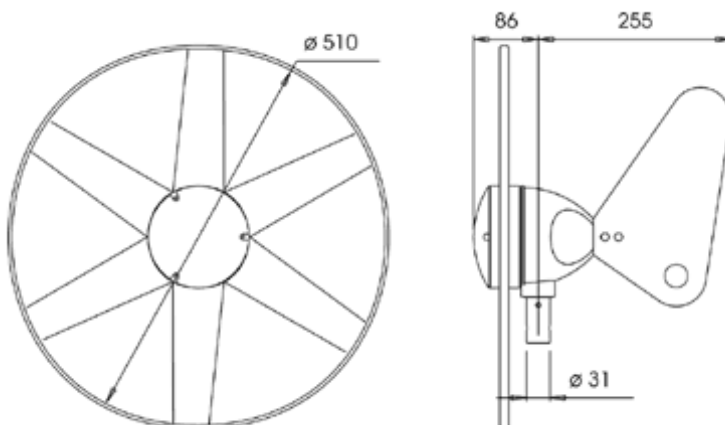
# The Rutland 503

The Rutland 503 is Marlec's smallest battery charging wind turbine and is designed predominantly for use on board sail boats though it lends itself well for use on touring caravans and at home to power lights to a shed or outbuilding.

Below you will see the performance specification and the dimensions of the Rutland 503.



## Dimensions



## Shipping Specification (mm)

1 Carton 550 x 550 x 260  
 Nett weight: 3.5kg  
 Gross weight: 6kg

## Technical Data

### Wind turbine performance specifications are not created equal.....

That's because to date there are no firm international standards for how small wind turbines are "rated." Most grid connect wind turbines are given a power specification at 10m/s (meters per second), the equivalent of 22mph or 19Knots. They do of course produce more power in stronger wind speeds. Marlec chooses to rate our wind turbines at this same standard of 10m/s as we believe that as the industry matures a reasonable level such as this one will be established. Manufacturers rating points vary and consequently it is necessary to compare output graphs across a wide band of windspeeds rather than accept individual rating figures for wind turbines.

### So how much power will a windcharger deliver?

The real measure of performance of wind turbines is "accumulated ampere hours" into a battery over a given period of time although this is a difficult measure for manufacturers to express since the users site for the windcharger will affect overall performance. Output graphs are usually an indication of instantaneous peak power at given wind speeds but in real conditions the wind is rarely constant, usually gusting up to 3 or 4 times the average.

Wind turbines can theoretically deliver 4 times the power in twice a given wind speed so calculating total power generated using average wind speeds is misleading.

As an example we will take 10 Knots as the average wind speed using a Rutland 913 Windcharger:

the Rutland 913 delivers 1.5A @ 10knots, then we could estimate a daily yield of 24hrs x 1.5A = 36Ampere hours.

However at the extreme the wind may blow at 20 Knots for 12 hours and be calm for 12hours, showing 10Knots as the average so the potential power generated can be quite different, ie at 20 knots the Rutland 913 delivers 7A, therefore 12hrs x 7A = 84 Ampere hours.

The actual accumulated ampere hours in reality is somewhere in the middle demonstrating that average figures can be misleading. This also reinforces the benefit of wind generators that run freely in low winds maximising the available power of the more regular gentle breezes as well as the peaky gusts.

### Consider the "fill factor"

The wind never blows constantly from one direction or at a steady wind speed, it blows in gusts. Most micro wind turbines are fitted with a free yawing mechanism and tail fin to direct the turbine into the wind. Where they differ is in the type of generator and aerofoil blades used which greatly affect their ability to adapt to the changing wind conditions. An unrivalled feature of all the Rutland designs is low wind speed performance. Our high inertia generators maintain momentum and speed between gusts of wind, continuing to generate power where more conventional designs slow down losing power and requiring a strong gust of wind to restart them. This means that overall a Rutland will generate more power into a battery bank in a day when compared to an equally sized or rated turbine and even in cases of generators of a higher "rated" capacity and turbine diameter! See the independent tests on our news pages and compare the turbine diameters to see that you don't always need a larger unit to generate the same or more power.

### To sum it up:

- We keep it simple so it's reliable
- We use durable materials so it lasts
- We innovate to deliver the best efficiency possible